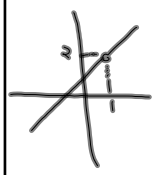
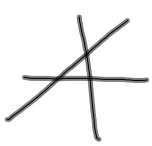
Review | Limits

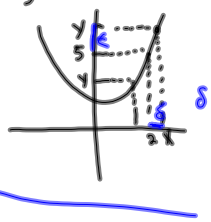
explain $\lim_{x\to 2} x^2+1 = 5$ to someone not in calc

as x gets closer to 2, x^2+1 gets closer to 5

$\lim_{x\to 1} \frac{x^2-1}{x-1} = \lim_{x\to 1} \frac{(x+1)(x-1)}{x-1} = 2$







Feb 17-8:56 AM

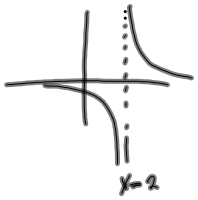
explain $\lim_{x\to\infty} \frac{1}{x-2} = 0$ to someone not in calc

as x gets big $\frac{1}{x-2}$ gets closer to 0

$\lim_{x\to 2^+} \frac{1}{x-2} = \infty$ $\lim_{x\to 2^-} \frac{1}{x-2} = -\infty$

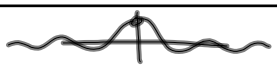
HA $\lim_{x\to\pm\infty} f(x) = L$ HA: $y=L$

VA $\lim_{x\to a} f(x) = \pm\infty$ VA: $x=a$



Feb 17-10:05 AM

Memorize



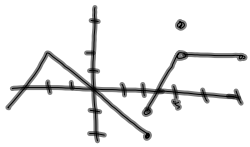
$\lim_{x\to 0} \frac{\sin x}{x} = 1$ $\lim_{x\to\infty} \frac{\sin x}{x} = 0$

$\lim_{x\to\infty} \left(1+\frac{1}{x}\right)^x = e$ $\lim_{x\to\infty} \left(\frac{x+1}{x}\right)^x = e$

$\lim_{x\to 0^+} \ln x = -\infty$ $\lim_{x\to\infty} \left(\frac{x}{x+1}\right)^x = \frac{1}{e}$

Feb 17-10:15 AM

left, right hand limits



$\lim_{x\to 3^+} f(x) = -1$

$\lim_{x\to 3^-} f(x) = -2$

$\lim_{x\to 3} f(x) = \text{dne}$

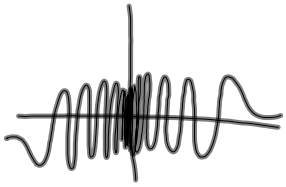
$\lim_{x\to 3} f(x) = 2$

$f(3) = 3$

$\lim_{x\to -2} f(x) = 2$

Feb 17-10:22 AM

$\lim_{x \to 0} \sin\left(\frac{1}{x}\right) =$ dne (diverges by oscillation)



Feb 17-10:29 AM